



Review on the Study of Signs of Puberty in Adolescent Girls with Bronchial Asthma

1. Akramkhajaeva Aziza Baxodir qizi

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¹ Tashkent Medical Academy

Abstract: Bronchial asthma (BA) is a disease characterized by chronic inflammation of the airways and is diagnosed by respiratory symptoms of wheezing, shortness of breath, chest tightness or cough, variable in duration and intensity, in combination with reversible airway obstruction. Bronchial asthma is a complex disease, the implementation of which is significantly influenced by multicomponent genetic and environmental factors. Despite the large number of studies on the mechanisms of asthma development, not all links of pathogenesis have been sufficiently studied, while the immune system plays a decisive role in the formation and maintenance of chronic inflammation of the airways, mainly of an allergic nature, but cases of the disease are also known with non-allergic inflammation.

Introduction. Bronchial asthma (BA) is a disease characterized by chronic inflammation of the airways and is diagnosed by respiratory symptoms of wheezing, shortness of breath, chest tightness or cough, variable in duration and intensity, in combination with reversible airway obstruction. Bronchial asthma is a complex disease, the implementation of which is significantly influenced by multicomponent genetic and environmental factors. Despite the large number of studies on the mechanisms of asthma development, not all links of pathogenesis have been sufficiently studied, while the immune system plays a decisive role in the formation and maintenance of chronic inflammation of the airways, mainly of an allergic nature, but cases of the disease are also known with non-allergic inflammation.

At the present stage, it is of interest to study the role of connective tissue in the formation and course of various chronic pathologies, including asthma.

The term dysplasia, in relation to connective tissue, implies a violation of the development of organs and tissues in the embryonic and postnatal periods and is currently considered as a genetically determined condition characterized by defects in the fibrous structures and the main substance of the CT, leading to disruption of homeostasis at the tissue, organ and organism levels in the form of various morphofunctional disorders of the visceral and locomotor organs, a progressive course that determines the features of the associated pathology. The generalized nature of connective tissue damage also predetermines disorders of the reproductive system. It has been shown that women with CTD are significantly more likely to experience complicated pregnancy and childbirth. Such women more often

give birth to premature babies and children with intrauterine growth retardation due to chronic fetal hypoxia. Thus, bronchial asthma associated with UCTD cannot but affect the development of the reproductive system in children and adolescents, and this aspect of the problem is considered relevant and poorly understood today.

Materials and methods of research. The literature review was carried out by reading with work that has been carried out over the past 5 years using search engines such as Google scholar , scientific research, Elibrary . We used articles that had an evidence-based clinical and experimental basis on the most pressing issues of sexual development in adolescents with BA.

Purpose of work: summarize the problem of sexual development in children with asthma based on literary sources on these pathologies.

Main part.

The prevalence of bronchial asthma is increases throughout the world and remains one of the main problems in pediatrics. According to the Global Asthma Network (The Global Asthma Network), currently about 334 million people suffer from this disease, 14% of them are children. In observations of phase III of the International Study of Bronchial Asthma and Allergies of Childhood (International Study of Asthma and Allergies in Childhood - ISAAC), the prevalence of asthma symptoms in preschool children according to 2007 data was: among children 6-7 years old 11.1% - 11.6%, among adolescents 13-14 years old 13.2% - 13.7 % [1,3].

In addition to immune and neurogenic mechanisms of the bronchial asthma development , endocrine ones are also distinguished. The role of sex and gonadotropic hormones in the pathogenesis of asthma in women today is an undoubted, but little-studied problem.

Bronchial obstruction and hypoxia in patients with bronchial asthma have a significant impact on the regulation of hormonal mechanisms of the reproductive system.

When analyzing patients with asthma regarding the severity and broncho-obstructive syndrome depending on gender, certain patterns were identified. In females, compared to males , despite the shorter duration of the disease, the severity of bronchoconstriction is greater. This condition with some probability implies the opposite influence of female and male sex hormones on the development of BA. Among the pathogenetic mechanisms of the development of BA, the authors also point to the disovarial mechanism of development. Based on this, it can be assumed that depending on age-related changes in the sexual sphere, one can assume the course or manifestation of bronchial asthma.

According to researchers L.I. Muradosilova , N.N. Kaladze , the hormonal relationships of puberty in children with bronchial asthma were studied, where girls aged 7 to 16 years were examined in the phase of exacerbation and remission of BA. The number of girls suffering from bronchial asthma were divided depending on the course of asthma, i.e. the exacerbation phase and the remission phase. Also, the girls were divided depending on gender and age into 2 groups: the first - children from 7 to 11 years old (prepuberty), the second - children from 12 to 16 years old (puberty) [1,2,5].

As a result of the studies, depending on age, data was obtained that, during the transition from prepuberty to the pubertal phase, i.e. during the period of 12 years, girls showed an increase in the level of LH with a reliability of $p < 0.05$, the level of prolactin in girls 12-16 years old at the time of the examination, the level of the hormone testosterone was significantly increased while estradiol showed an inverse proportionality in the reliability of the data in girls 12-16 years old .

In girls suffering from bronchial asthma, depending on the period of asthma, an increase in the levels of gonadotropic hormones was observed both during exacerbation of asthma and during the period of remission. In girls suffering from asthma aged 7-11 years, there was a significant increase in LH levels

($p < 0.05$) during the period of exacerbation, and this fact indicated that the increase in this hormone is mediated by the stress reactivity of the body to the course of asthma. In the group of girls aged 12-16 years, there was a significant decrease in prolactin levels during the exacerbation period ($p < 0.05$). This was explained by a lack of adaptation to stress during an exacerbation in patients with asthma. In girls, the level of testosterone turned out to be high in the remission stage and practically no fluctuations were noted with age; it was similar with estradiol during the period of remission, but it should be noted that with age the level of estradiol decreased in both phases of the course of asthma with significance (0.01) in girls in aged 12-16 years.

In the course of the studies, in girls suffering from asthma, it was revealed that there was a hormonal imbalance, the absence of a natural increase in sex hormones: that is, girls had significantly high levels of testosterone, but reduced levels of estradiol. There was an increase in the level of gonadotropic hormones and prolactin at the age of 12-16 years compared to normal levels. These changes indicate that adaptation processes in the body of children suffering from bronchial asthma also involve changes in pituitary hormones.

When assessing the signs of secondary sexual development, it was revealed that some girls experienced a delay in the rate of puberty, in which signs of puberty were manifested by their slow development, or a stop in secondary puberty; menarche did not occur in girls [1,2,3].

The frequency of occurrence of asthma, depending on gender, more often develops in boys before puberty, and in girls most often after puberty, and this is also explained by the frequent occurrence of asthma in women. Changes that occur during key stages of a woman's life, such as puberty, pregnancy, menopause and aging, suggest the importance of the role of female sex hormones [3,4]. From some sources it is known that estrogens have a moderate bronchoconstrictor effect, and progesterone has a bronchodilator effect. A feature of the hormonal homeostasis of the reproductive system in women is the naturally recurring maturation of follicles, ovulation, formation of the corpus luteum, and biphasic secretion of ovarian hormones [4].

According to R. S. _ Bonds , T. _ Midoro - Horiuti , 30-40% of women reported worsening symptoms of the disease during the menstrual cycle, namely in the perimenstrual phase, shortly before and for the first few days of the monthly period. This category of women subsequently developed a more severe form of BA [4,7].

Research conducted by the author J. _ Thornton , also confirm monthly exacerbations of asthma, which were carried out in 11% of 1260 females aged 12 to 55 years [6,9].

M. _ T. _ Salam et al ., conducted research work, which included 905 females using hormonal contraceptives and found that their risk of developing asthma increased by 1.75 times (95% confidence interval 1.15-2.65) [8]. The author also assessed the role of the onset of menarche depending on age: in women with the onset of menarche before 12 years of age, the risk of developing asthma after reaching puberty increased by 2 times compared with women in whom menarche occurred after 12 years of age (95% CI 1.05-4. 12) . Thus, early onset of menarche was regarded as a risk factor for the development of AD [7,8,4]

Conclusion. The data obtained from various sources may indicate that girls suffering from bronchial asthma have disturbances in the neuroendocrine regulation system, affecting pituitary-gonadal disorders caused by the course of the underlying disease. In children suffering from asthma , gonadotropic and sex hormones are also included as a mechanism of adaptation to stress, and this is manifested in their fluctuations at the plasma level depending on age, duration of the disease and the activity of the pathological process. From the above, it should be noted that female sex hormones play a significant role in the development of allergic diseases, including asthma, and even aggravate the course of this disease. Disturbances in sexual development in teenage girls can affect their

reproductive potential, and it is also important to note that this problem will not be the only one for them and can lead to disorders in their mental health and affect their quality of life.

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